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ABSTRACT

This project was designed to test the effects of a language curriculum based on skills needed to learn the letters of the alphabet, to develop and test methods of assessing a language program, and to look at the training effects across differing subject populations. Subjects included boys (half of whom were black) who were from two integrated schools and who knew less than half of the letters of the alphabet. Different teaching strategies were used to teach the alphabet--a modified Bereiter technique, spending four to six minutes with each individual, rotating teachers, and the use of personal student notebooks. Subjects were given two tests: the Matching Familiar Figures Test (MFF) to identify subjects with varying conceptual tempos and the Ambiguous Figure Test to look at the ability of the subjects to communicate with one another. Results indicated that the experimental subjects learned more letters than the control group and that black subjects did significantly better than white subjects. No significant correlations were found on the MFF, indicating that it might have been inappropriate for the subjects. The most interesting discovery was the fact that there was a large variation in the knowledge of the alphabet without teacher awareness and that many of the middle-class children knew the alphabet. (HS)

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LANGUAGE INTERVENTION AND EVALUATION PROJECT

Vernon C. Hall

The purpose of this project was to (1) test the effects of a language curriculum based on skills needed to learn the letters of the alphabet (2) to develop and test methods of assessing a language program (3) to look at the training effects across differing subject populations, and (4) as a result of all of the above to learn more about the lower-class urban child.

The project was rather unusual in that the emphasis was on teaching specific skills through the use of language rather than employing a more general language curriculum. It was felt that both specific gains and generalization effects could then be measured.

Subjects

Ss were boys drawn from two integrated schools (about 37 percent black in one school and 25 percent in the other). Originally it was intended to vary both social class and race but as will be explained later this turned out to be impossible. It was possible, however, to use the race variable and half of the Ss were black. The basis for selection of Ss to be included was their performance on a pretest constructed by the Es. This pretest included naming all letters of the alphabet (both capital and small letters) and other skills which were felt necessary for being able to recognize the alphabet.

Rationale

The rationale behind the present project was that rather than presenting a general language curriculum and testing for specific gains (I. Q. or some other test) it made more sense to teach language for a specific purpose and then measure both the specific gains (or losses) and the generalization effects which would hopefully accrue. The ability to name the alphabet was chosen for several reasons: (1) This skill is extremely important for youngsters to know. It has been shown that ability to name the alphabet is the best predictor of subsequent reading achievement scores. (2) This skill should be enhanced by the intelligent use of language. For instance, if the child knows the proper words, it is possible for him to identify through description all the letters. This ability to describe should in turn help the S both identify and remember the labels of individual letters, as well as other important objects in his environment. (3) The curriculum for kindergarten in the Syracuse public school system does not include teaching the letters of the alphabet and two teachers of the Ss used specifically pointed out to the E that they did not teach the alphabet because the Ss were not yet ready. Thus, the E assumed that the kindergarten Ss regardless of sex and race would not yet know the labels for the alphabet.

Test Instruments

The Alphabet Pretest. The Alphabet Pretest consisted of fifty-two 3 x 5 cards with one of the letters of the alphabet on each card plus the following other skills: (1) A picture of a horse which the E used to determine whether or not the Ss knew the definition of top, bottom, upside down, right side up, right and left as it referred to him. (2) Each S was asked to raise his hand at the beginning and end of the test. It was hoped that Ss would typically raise the same hand and the use of that hand would serve as an aid in teaching left and right. (3) The S was asked to identify slanting lines, curved lines, straight lines, horizontal lines, and finally pick out objects that were same and different.

The Matching Familiar Figures Test (MFF). This test is used by Kagan to identify Ss with varying conceptual tempos. The test itself consists of twelve standards and six variations of each standard as well as one object which is identical to the standard. Kagan is interested in studying the children who are above the median in time and below the median in error (called reflectives) as opposed to those Ss below the median in time and above the median in error (called impulsives). The present Es used the MFF for two reasons: (1) First, there has been a great deal of literature which indicates that lower-class children are hyperactive but no good hard evidence

to that effect. The MFF might well be an index of this behavior and thus give us some evidence of its existence. (2) Because learning the alphabet is essentially a form discrimination task it would be predicted that the ability to use language to discriminate between letters would also aid the children in other discrimination tasks. In addition, if the children learned what to look for in discriminating between forms it would be predicted that they would take longer in making choices and thus would become more "reflective."

The Ambiguous Figure Test. The Ambiguous Figure Test consists of six ambiguous figures which the subjects are required to label. In the past this task has been used to look at the ability of young Ss to communicate to one another. In essence one S labels a particular ambiguous figure and another S attempts to identify the figure to which the first S is referring. Various techniques have been used to facilitate the communication. Originally it was hoped that the pretest labels could be contrasted with the post-test labels. In addition, it was assumed that children would improve in their ability to choose particular figures correctly from the description of other Ss. Unfortunately, upon looking at the labels given by the young Ss in our sample we found that while the figures may be ambiguous enough to acquire a variety of names, different figures did acquire the same label or name. Although no one else has reported this in their data,

the present Es found this difficulty to be so prevalent that the task was not even given as a post-test. The problem can be illustrated by the following example. If ambiguous figure 1 is called a snake by S 1 and ambiguous figure 2 is called a snake by S 2, then what happens when S 3 feels that S 1 is describing figure 2? Obviously labels are not sufficient to allow proper identification. For this task to be used the present E feels that descriptive terms rather than labels must be relied upon (i.e., a round line with a dot on the end, etc.). In the context of the present study it would have been necessary because of the time problems to use the original labels or descriptions on the post-test. Unfortunately, as already explained, we did not require the young Ss to generate the proper kind of description on the pretest. We do feel that such a task does have merit and should be further investigated in other studies concerned with language competence. It should be pointed out, however, any shape or form could be used this way without relying on "ambiguous" shapes.

Procedures

Our initial procedure consisted of individually pretesting all kindergarten boys from five classrooms available to us (two in one school and three in another) with the goal of identifying a large enough sample from which the E could randomly select sixteen black and

sixteen white Ss and still have an adequate control group. It will be recalled that the requirement for being an S included in the experiment was that he know less than half of the letters of the alphabet. Therefore, initially all pretests were evaluated based on the above criterion. It was found that all Ss designated by the kindergarten teacher as being middle-class knew all or nearly all of the alphabet. This finding alone, the present Es felt was very important, especially in the light of the fact that almost all developmental or educational psychology text books suggest that reading cannot be taught before first grade (some stick to the M. A. of 6. 5) because they are not yet "ready." Part of being ready concerns the ability to discriminate between letters.

For the children designated as lower-class only a few knew the difference between a letter or number let alone knowing the alphabet. This meant that the original division between lower- and middle-class experimental Ss was impossible. This break may have been so dramatic because the school which contained the middle-class Ss came from university faculty homes. In previous times (within the last ten years) this school had been considered the best in the city. This left the Es with an insufficient number of Ss. As a result of the lack of Ss, the Es asked the school located in the lower-class area to submit students in pre-first and first grade to the pretest. This led to the location of seven pre-first and five first graders who

knew less than half of the alphabet. These Ss were subsequently included in the experimental sample. The justification for their inclusion revolves around the position that schools should try grouping on the basis of knowledge rather than age. In the present case the five first graders all were included in a reading group even though their teachers were aware that they did not know how to read very well. It is interesting, however, that they were not included in the pre-first grade class. The basis for inclusion in the pre-first grade class did not seem to be related to reading ability. Since this study was done in the spring, however, it could be that inclusion was merely the result of differential treatment effects and that these children did, indeed, begin at different levels of knowledge.

As might be expected, the children in these schools who were included in the experimental sample also were known to be quite transient and absent a good deal of the time. The original goal was to include eight children in four groups recognizing some would be lost. As it turned out, twenty-six experimental Ss maintained their attendance throughout and had pre-, mid- and post-test data gathered on them. In addition, there were nine Ss who served as controls and the E had identical data for them. Thirteen of these experimental Ss were black and thirteen were white. Only one of the control Ss was black, however.

Teaching Strategy

Part of the purpose of the intervention project was to try out teaching strategies. Operationally, this meant that the first three weeks were spent using a modified Bereiter technique (complete with workbooks which included completion of letters). The second three weeks used a modification of the technique discussed by Blank in which the E spent 4 to 6 minutes with each individual S so that the total time spent for eight children approximated the time spent in the group session. As it turned out this second strategy took slightly more time since the group sessions ran for between 20 to 30 minutes. The actual individual duration depended on how well the lesson was going in the judgment of the E with minimum times of 20 minutes for the group sessions and 4 minutes for the individual sessions. These strategies were chosen because they were both well-known strategies recommended for preschool intervention projects and the Es were anxious to gain an impression of how effective they would be for grade school use.

The teachers themselves were rotated so that each teacher taught eighteen sessions and saw each of the classes an equal number of times. This was done because the Es wanted to minimize teacher personality factors.

An added feature of the strategy was the inclusion of a notebook which was given to each child along with a pencil. This notebook

was used by each student to draw letters, etc., and could be used by the teacher to keep track of progress. Since each notebook was personally used by each child, one of the first learning tasks was for each child to learn to identify his notebook.

Results

Data on Number of Letters

The first question to be answered concerned whether the Ss learned the letters of the alphabet. This was determined through the use of a 2 (experimental and control) x 3 (tests, the repeated measure) repeated measures analysis of variance for unequal ns. Table 1 gives the means for the three tests for the two groups. There was a significant difference between experimental and control groups ($F = 166.46$ df, 1/32, $p < .01$) a significant test effect ($F = 1414.70$, df 2/64, $p < .01$) and a significant experimental control by test interaction ($F = 70.61$, df 2/64, $p < .01$). This means that the experimental Ss learned more letters than the control group even though they started out at a lower level. Although both groups improved after the first three weeks, only the experimental group continued to improve. This improvement was not very great, however.

TABLE 1

Mean Number of Letters Correct for Each Group

	Pretest	Midtest	Post-test
Exp.	4.00	16.11	17.20
Cont.	7.62	12.80	12.81

An additional 2 (black and white) x 2 (pre- and post-) analysis was computed comparing black and white experimental Ss. Besides the significant pre-post main effect, this analysis resulted in a significant main effect ($F = 6.04$, $df = 1/25$, $p < .05$) between black and white Ss. In this case the black Ss did significantly better than the white Ss. There was also a significant race by pre-post interaction which resulted from the fact that both Ss started at about the same level but the black Ss showed a greater degree of improvement. This, in turn, could be accounted for by the larger number of black Ss in pre-first and first grade (9 to 2). In this case the alphabet may have seemed more relevant.

Data on Conceptual Tempo

The first area of interest with conceptual tempo concerned the relationship between time and errors with the pretest. Here it was found with the complete sample including all Ss pretested that the correlation was .12 which is, of course, nonsignificant. This could mean

that the MFF is inappropriate for these Ss. Although it has been used for kindergarten and first grade Ss before, there are some necessary prerequisites in knowledge which these Ss seemed to lack. For instance, to many of the Ss all of the six variants of the standard looked the "same" so that asking them to find the one which was the same as the standard didn't make any sense to them. It also appears that the children were all very impulsive. The mean latency for the entire MFF was 71.4 seconds (S. D. = 34.4) which seems extremely fast. Unfortunately, there are no norms for the MFF at this age.

The test-retest reliability for the total sample on the time again resulted in a nonsignificant r of .08 (n-35). The test-retest on the error, however, indicated that the Ss did have some concept of same and different (r .33, 34 df, $p < .05$). This relationship is very difficult to interpret, however, since both pre- and post-test mean number of errors were very high (25.7, S. D. = 6.1 and 23.6, S. D. = 6.5). It probably means that most Ss either could do the task or operated at chance levels both times. A 2 (experimental-control) by 2 (pre- and post-test) analysis of variance revealed no significant Fs. An identical analysis for time also resulted in no significant differences.

Discussion

Probably the finding which the E found most interesting was the fact that there was a large variation in the knowledge of the alphabet without teacher awareness. In addition, it was surprising that so many of the children in the middle-class knew the alphabet even though educational psychologists continue to emphasize to teachers the role of "readiness." In other words while teachers are concerned about teaching the alphabet too early, parents have already been at the job. On the other hand, for the lower-class children this has not been the case and the teachers error by not emphasizing specifics of the alphabet. Therefore, we have first graders at the end of the year who do not yet know the letters. These kinds of differences emphasize difficulties when different social classes are all placed in the same classroom. It also emphasizes the importance of the teacher having information available on specific skills possessed by specific children.

With regard to the actual intervention itself, we can say that some learning did take place. Considering the limited time available and the fact that to some extent the learning was out of context for the real school, this is in some respects surprising. It is also obvious that experimenter familiarity is an important variable and it is necessary in this kind of study to have more than one post-test.

The amount of learning must not be over-emphasized, however, since a total gain of thirteen letters is not really very much. In addition, there were no significant generalization effects for the MFF which indicates that the learning was quite specific.

It is impossible to evaluate the two methods employed other than a subjective judgment on the part of the Es. It is their feeling that the individual procedure has much to offer but that it does take more total time than the group procedure. It is the opinion of the Es after much observation of teachers at differing levels of competency that the group method used by Bereiter is effective for basic memorization skills such as the one used here. Whether it is as effective for the more advanced kinds of knowledge is as yet undetermined.